1. A magnetic tunnel junction (MTJ) cell, said cell comprising:

a shape having smoothly curved ends to prevent thereat the formation of magnetic poles and discontinuities, and;

a shape having its narrowest dimension at its middle and having thereat an artificial nucleation site for creating a lowered threshold for magnetization switching by an external magnetic field and a reduced sensitivity to defects and shape irregularities; and

said cell having a crystalline anisotropy.

2. The MTJ cell of claim 1 further comprising:

a ferromagnetic free layer;

an insulating tunneling layer formed on said free layer;

a multi-layered magnetically pinned layer formed on said tunneling layer, said pinned layer further comprising:

a first ferromagnetic layer adjacent to said tunneling layer;

a non-magnetic coupling layer formed on said first ferromagnetic layer;

a second ferromagnetic layer formed on said coupling layer;

an antiferromagnetic pinning layer formed on said second ferromagnetic layer; and

said multi-layered magnetically pinned layer has a net magnetic moment which is substantially zero as a result of the magnetic moments of said first and second

ferromagnetic layers being substantially equal and strongly magnetically coupled in an anti-parallel configuration.

3. The cell of claim 2 wherein said free magnetic layer is a multilayer comprising a third and fourth ferromagnetic layer separated by a non magnetic spacer layer and wherein the magnetizations of said ferromagnetic layers are substantially equal and may be weakly or strongly coupled in antiparallel directions to produce a substantially zero net magnetic moment.

4. The cell of claim 2 or 3 wherein the tunneling layer is a layer of insulating material chosen from the group of insulating materials consisting of as Al_2O_3, ZrO_2 or HfO_2 and combinations thereof.

5. The cell of claim 4 wherein the tunneling layer is a layer of Al_2O_3 formed to a thickness of between approximately5 and 50 angstroms.

6. The cell of claim 2 or 3 wherein the coupling layer is a layer chosen from the group of non-magnetic coupling materials consisting of Rh, Ru, Cr and Cu.

7. The cell of claim 6 wherein the coupling layer is a layer of Ru formed to a thickness of between approximately 5 and 50 angstroms.

8. The cell of claim 2 or 3 wherein the antiferromagnetic pinning layer is a layer chosen from the group of antiferromagnetic materials consisting of PtMn, NiMn, OsMn, IrMn, NiO, FeMn and CoNiO.

9. The cell of claim 8 wherein said pinning layer is a layer of PtMn formed to a thickness between approximately 30 and 300 angstroms.

10. The cell of claim 2 wherein the ferromagnetic free layer and the first and second ferromagnetic layers of the pinned layer are formed of ferromagnetic materials chosen from the group of ferromagnetic materials consisting of CoFe, NiFe, CoNiFe, CoZrTa, CoFeB and CoHfTa.

11. The cell of claim 3 wherein said first, second, third and fourth ferromagnetic layers of the pinned layer are formed of ferromagnetic materials chosen from the group of ferromagnetic materials consisting of CoFe, NiFe, CoNiFe, CoZrTa, CoFeB, CoZrTa, CoNbTa and CoHfTa.

12. The cell of claim 1, 2 or 3 wherein each segment of said cell is shaped by a process comprising photolithography and ion-milling.

13. The cell of claim 1, 2 or 3 wherein the shape is approximately that of a peanut or a kidney.

14. The MTJ cell of claim 3 wherein the ratio of length to width of the cell is between 1 and 10.

15. The cell of claim 13 wherein the crystalline anisotropy of the cell is along its narrowest dimension.

16. A method for fabricating a magnetic tunnel junction (MTJ) cell, said cell having a narrow dimension at its middle whereat artificial nucleation sites for magnetization switching are formed and said cell having a reduced sensitivity to defects and shape irregularities comprising:

forming an MTJ layered stack, the magnetic layers of said stack having a common crystalline anisotropy;

patterning within said stack, by photolithograpy and ion-milling methods, at least one MTJ cell having a narrow dimension at its middle.

17. The method of claim 16 wherein the method of forming the MTJ stack further comprises:

forming a ferromagnetic free layer;

forming an insulating tunneling layer on said free layer;

forming a multi-layered magnetically pinned layer on said tunneling layer, said pinned layer formation further comprising:

forming a first ferromagnetic layer adjacent to said tunneling layer;

forming a non-magnetic coupling layer on said first ferromagnetic layer;

forming a second ferromagnetic layer on said coupling layer;

forming an antiferromagnetic pinning layer on said second ferromagnetic layer, wherein said multi-layered magnetically pinned layer has a net magnetic moment which is substantially zero as a result of the magnetic moments of said first and second ferromagnetic layers being substantially equal and strongly magnetically coupled in an anti-parallel configuration.

18. The method of claim 17 wherein said free magnetic layer is formed as a multilayer comprising a third and fourth ferromagnetic layer separated by a non magnetic spacer layer and wherein the magnetizations of said ferromagnetic layers are substantially equal and may be weakly or strongly coupled in antiparallel directions to produce a substantially zero net magnetic moment.